

## Patent Abstracts of Japan

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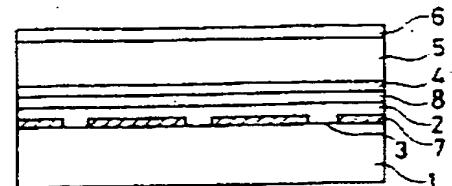
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TITLE : SOLAR CELL



ABSTRACT : PURPOSE: To obtain a high-efficiency solar cell of a tandem structure by a method wherein a p-n junction on the lower side is formed partially and optical carriers generated, in a semiconductor layer on the lower side, by light which has passed a semiconductor layer on the upper part are gathered in a concentrated manner.

CONSTITUTION: An insulating film 7 having through holes is formed on a p-type Si layer 1; an n-type fine-crystal Si layer 2 is grown on the surface of the p-type Si layer 1 exposed in parts of the through holes; and a p-n junction 3 is formed in a scattered manner. A transparent conductive film 8 is formed on the n-type fine crystal 2; a p-type amorphous Si layer 4, an i-type amorphous Si layer 5 and an n-type amorphous layer 6 are formed sequentially on the transparent conductive film 8. In this case, light which has passed the amorphous Si layers 4 to 6 is absorbed mostly into the p-type Si layer 1 because the n-type fine-crystal Si layer 2 is thin; generated optical carriers are gathered by the p-n junction 3 which has been formed in a scattered manner; and a current density flowing in the p-n junction 3 is increased largely. Thereby, it is possible to obtain a high-efficiency tandem solar cell.

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